But it is on his own opinions that Brigade-Surgeon Godwin mainly relies in criticising my proposition, and they really involve the main issues. He inclines to the belief that a Syme or a Pirogoff is much more hazardous and much less preferable than a Chopart or a Hey, and urges a caution about performing the former, which would be more than justified were his view correct. But is Brigade-Surgeon Godwin's view correct, more particularly in these days of anæsthetics and antiseptics? Are not opinions precisely contrary expressed in our text-books on operative surgery? Not to take a number, I will quote simply and without controversial straining those of one of the most distinguished teachers and successful surgeons of the Edinburgh School, Joseph Bell. He says of Hey's, "it is now comparatively rarely performed." Of Chopart's, "it has been so completely superseded by the infinitely preferable amputation at the ankle-joint of Mr. Syme as rarely, if ever, to be practised in this country. Indeed, amputation at the ankle-joint (and Pirogoff is classed as a modification) may be said to have taken the place of all these amputations through the tarsus; for though cases are occasionally met with in which the limitation of the disease or injury may render Chopart's possible, and though at first sight it appears to have the advantage of removing less of the body, still the following objections are nearly fatal to its chance of being selected," etc. Of Symes, "it is wonderfully free from danger to life," a statement he fortifies both by his own extended experience and by statistics.

In the face, then, of such strongly expressed opinions, backed as they are by such experience, I do not altogether see how Brigade-Surgeon Godwin's views are tenable. There is no doubt about the advantage of the Syme's and Pirogoff's stumps mechanically; are they so strongly contraindicated surgically as to render the other operations preferable? From what I have quoted, precisely the reverse seems to be the case.

At the present juncture, however, all these questions as to what operations combine the greatest safety with the best stumps are of paramount importance, and deserve to be fairly and impartially discussed. It is especially the case in military surgery, and more so when raised by one who holds the eminent position at Netley that Brigade-Surgeon Godwin does, because his views would naturally guide future army surgeons. In private practice a surgeon performing amputation has probably the opportunity of watching the after-results for years, of estimating the relative advantages of various stumps, and of acting in future accordingly. With army surgeons the case is different, because when once the maimed soldier has recovered and is discharged, he passes over to the permanent care of the Lords Commissioners of Chelsea Hospital for the issue and maintenance of an appropriate alliance. The Commissioners have recently expressed their intention of making what improvements are possible in the substitutes granted to maimed soldiers; and at their request I have drawn up a report on the subject. It would be particularly felicitous if, while the appliances are being improved, the operations which afford the best stumps were definitely determined by unbiassed discussion among competent authorities.—I am, etc.,

Wimpole Street. HEATHER BIGG.

THE ADMINISTRATION OF NITROUS OXIDE AND ETHER IN COMBINATION OR SUCCESSION.

SIR,—In reference to a letter by Dr. Buxton in the JOURNAL of September 24th, in which he alludes to small, light steel bottles for compressed nitrous oxide, I shall be glad if you will allow me, as a partner in the firm of Messrs. Barth and Co., to call attention to a matter which I have reason to believe has not been taken into consideration by some makers of liquid nitrous oxide bottles. Liquid nitrous oxide has a very high coefficient of expansion, one volume at 0°C. (32°F.) becoming 1.12 volumes at 20° C. (68° F.); as far as I know, the rate of expansion above this temperature has not been determined; but assuming it to be at the same rate, one volume at 0° C. would become 1.60 volumes at 100° C., the boiling point of water. Fifteen ounces of liquid nitrous oxide (which is the amount sold as fifty gallons) occupies a space of 27.7 cubic inches at 0° C., at 20° C. it would occupy a space of 31.02 cubic inches, and at 100° C. (212° F.) a space of 44.32 cubic inches.

Assuming liquid nitrous oxide to be practically incompressible, like water, iron or steel bottles tested to 4,000 lbs. to the square inch, would not be strong enough to stand the pressure of the expanding liquid. I should therefore recommend those who use small light bottles (unless a fallacy in my argument can be pointed out) to ascertain the capacity of the bottles they use; and if the capacity of a fifty gallon bottle is much less than 40 cubic inches, they should be very careful not to place the bottle near a fire, or in any way raise the temperature, when full.

I call attention to this matter in the interest of the public, and also in the interest of our firm, as, if an accident was to happen, it would in all probability lead, in a great measure, to the abandonment of the use of the compressed gas.—I am, etc., E. G. B. BARLOW,

Fellow of the Chemical Society, and Mem. Soc. Chem. Industry.

SIR,—It is most gratifying to me to find that my paper on the above subject has afforded material for so much discussion. I have read the letters of Dr. Silk and Dr. Buxton with considerable interest, inasmuch as they emanate from gentlemen who are equally qualified to express opinions on the administration of the two anæsthetics in question. Dr. Silk's conclusions are practically identical with my own; and I need hardly do more than thank him for his courteous letter. With regard to the views expressed by Dr. Buxton, I am somewhat less happily situated; for although I cannot read his letter without appreciating the truly scientific spirit in which it was written, I find myself unable to agree with the conclusions at which he has arrived.

When preparing my paper it seemed to me superfluous to refer to the well-known labours of Clover—labours which were productive of such beneficent results; nor did I see any necessity for referring to the hospital with which the name of Clover still continues to be associated. I trust I may be excused for these omissions; my paper was intended to precisely define the advantages which may be secured by the combined and successive administration of nitrous oxide and ether, and to describe in detail the methods which I had found by experience to be the most trustworthy. The best way to conduct the administration of the two anæsthetics is, I would submit, purely a matter of opinion; and I desired rather to give prominence to certain methods of procedure which I had fully tried than to enter upon the ungracious but easy task of discovering faults in the mechanical contrivances of others. But since Dr. Buxton has so strongly espoused the claims of Clover's nitrous oxide and ether apparatus, and expresses surprise that I have not alluded to it, I fear I have no other alternative than to give my own impressions concerning it.

In the administration of a general anæsthetic, I hold that as much attention should be bestowed upon the preliminaries of the administration as upon the subsequent narcosis; in other words, the anæsthetist who is desirous of artificially inducing sleep with the minimum amount of mental disturbance, should exert all his ingenuity and tact in establishing confidence and calm in the mind of his patient. Now, to a nervous individual about to undergo an operation I know of nothing more terrifying—save perhaps the sight of the instruments—than the appearance of the anæsthetist, equipped with Clover's nitrous oxide and ether apparatus. The mental inquietude occasioned by the sight of the ungainly apparatus is not lessened when the anæsthetist commences to work the gas bottle, and the hissing noise warns his victim that his time (for operation) has come. I will not fill in this bare sketch; I have over and over again felt much sympathy for hospital patients thus anæsthetised, and I have on a corresponding number of occasions resolved never to employ the apparatus which Dr. Buxton has characterised as unrivalled. I pointed out in my paper the manner in which nitrous oxide may most advantageously be given prior to etherisation, for a prolonged operation. If the administration be conducted precisely as I have described, the patient hardly knows the moment at which the administration commences, and he sinks quietly but quickly to sleep with as little mental disturbance as it is possible to secure.

In conclusion, I would state that the method of administration which I have advocated for ordinary surgical operations has not, so far as I can ascertain, been employed before, although many apparently similar plans have been recommended. With proper care the patient never detects any smell of ether; in dental practice the apparatus can be readily held in one hand, and when once the patient is deeply etherised the gas bag may be replaced by the smaller bag usually supplied with Clover's portable inhaler, and the narcosis maintained as with the latter apparatus. Apologising for again trespassing upon your space, I am, etc., FREDERIC HEWITT.

George Street, Hanover Square, W.

INTRACAPSULAR INJECTION IN THE EXTRACTION OF CATARACT.

SIR,—In my letter published in the JOURNAL of September 17th, the sentence "the incision was much more peripheral than now, and hence escape of vitreous was very uncommon," should have read: "the incision was much more peripheral than now, and hence escape of vitreous was not very uncommon."—I am, etc.,

Dublin, September 27th. H. R. SWANZY.